

In the Claims:

1. (Currently amended) A cellular wheel sluice constructed as an axial blow-through sluice, particularly for dosing a particulate material, comprising a supply chute (2) adapted to feed the particulate material and therebelow a cellular wheel (4) that is provided with radial cellular wheel webs (3) on a cellular wheel core (9) and that is arranged to rotate about a horizontal axis in a housing, which housing has a blow-in hole (10) and a blow-out hole (11) arranged in the housing below the horizontal axis of the cellular wheel within a rotational area of the cellular wheel webs (3) and positioned opposite each other in vertical side walls of the housing, characterized in that an injection injector nozzle (15) is integrated in the area of the blow-in hole (10), said injector nozzle has an internal nozzle passage that converges to a throat and diverges from said throat to a nozzle outlet opening at an end of said injector nozzle arranged at said blow-in hole, said injection injector nozzle [[being]] is adapted to blow transport air successively into plural dosing chambers (5) respectively formed between successive neighboring ones of the cellular wheel webs (3) while causing a reduced pressure of said transport air around said blow-in hole successively in each said dosing chamber, and in that the cellular wheel webs (3) are provided with gap seals (12) that are made of a material as hard as a metal and are

26 positioned at radial outer ends of the cellular wheel webs
27 with a radial spacing gap between each one of the gap seals
28 and a cylindrical wall of the housing around the cellular
29 wheel, wherein radially outer edges of the gap seals are
30 configured as respective acute shear-cutting edges that are
31 oriented facing circumferentially forward in a rotation
32 direction of the cellular wheel, and further comprising a
33 counter-cutting member with a counter-cutting edge arranged
34 in the supply chute at a chute-bounding side wall thereof
35 that is circumferentially downstream with respect to the
36 rotation direction of the cellular wheel, wherein the
37 counter-cutting edge is positioned relative to the
38 shear-cutting edges and oriented circumferentially opposite
39 the shear-cutting edges so as to cooperate with the
40 shear-cutting edges to shear-cut particles of the
41 particulate material between the counter-cutting edge and
42 the shear-cutting edges, and wherein said injector nozzle
43 is adapted to cause said reduced pressure of said transport
44 air around said blow-in hole so as to reduce an amount of
45 leakage of said transport air through said radial spacing
46 gaps past said gap seals.

- 1 2. (Currently amended) The cellular wheel sluice of claim 1,
2 characterized in that the ~~injection~~ injector nozzle (15) is
3 set-in coaxially and inwardly in a blow-in pipe socket (16)
4 secured to the blow-in hole (10), said ~~injection~~ injector
5 nozzle causing a reduction of the blow-in cross-section in

the area of the blow-in hole (10) relative to the blow-in pipe cross-section.

Claims 3 to 9 (Canceled).

10. (Previously presented) The cellular wheel sluice of claim 1, characterized in that the blow-in hole (10) and the blow-out hole (11) are positioned axially opposite each other in the vertical side walls of the housing, and in that a cross-sectional area of the blow-out hole (11) has about the cross-section of one of the dosing chambers (5).

11. (Currently amended) The cellular wheel sluice of claim 1, characterized in that the ~~injection~~ injector nozzle (15) is constructed as a pipe shape and ~~comprises a~~ said nozzle outlet opening ~~(24) having~~ has a diameter corresponding, at the most, to one half of the median diameter of one of the dosing chambers.

12. (Previously presented) The cellular wheel sluice of claim 1, characterized in that the gap seals with the shear-cutting edges are constructed as separate components that are made of a spring steel or other low wear steel alloy and that are exchangeably secured to the cellular wheel webs (3).

1 13. (Previously presented) The cellular wheel sluice of claim
2 1, characterized in that the counter-cutting member is a
3 counter-cutting blade arranged in the supply chute (2)
4 parallel to the shear-cutting edges (12) which rotatingly
5 pass by the counter-cutting edge in an opposing alignment.

1 14. (Previously presented) The cellular wheel sluice of claim
2 1, characterized in that the housing (1) is provided with
3 a wear bushing (21) on the cylindrical wall and is provided
4 with a wear lining (14) on inner surfaces of the vertical
5 side walls, and in that the wear bushing and the wear
6 lining are made of a spring steel material or a low wear
7 steel alloy.

1 15. (Previously presented) The cellular wheel sluice of claim
2 1, characterized in that the cellular wheel webs (3) are
3 secured to the cellular wheel core (9) so that the
4 shear-cutting edges (12) extend at a circumferentially
5 skewed slant to the horizontal axis or with a slight
6 helical shape about the horizontal axis.

1 16. (Previously presented) The cellular wheel sluice of claim
2 1, characterized in that the counter-cutting edge is
3 arranged at a circumferentially skewed slant to the
4 horizontal axis and the cellular wheel webs are straight
5 and parallel to the horizontal axis.

1 17. (Previously presented) The cellular wheel sluice of claim
2 1, wherein said radial spacing gap has a radial measure
3 from 0.2 mm to 0.5 mm.

1 18. (Previously presented) The cellular wheel sluice of claim
2 1, wherein each one of the dosing chambers has a
3 substantially trapezoidal, annular sector cross-sectional
4 shape, and the blow-out hole has a substantially
5 trapezoidal, annular sector opening shape.

1 19. (Previously presented) The cellular wheel sluice of claim
2 18, wherein the opening shape of the blow-out hole has an
3 area that approximately corresponds to an area of the
4 cross-sectional shape of a respective one of the dosing
5 chambers.

1 20. (Currently amended) An axial blow-through cellular wheel
2 feeder for feeding particulate bulk solid material,
3 comprising:

4 a housing that comprises a cylindrical wall extending
5 concentrically about a horizontal axis, and planar vertical
6 side walls at axial ends of said cylindrical wall, wherein
7 said cylindrical wall and said side walls bound a
8 cylindrical space in said housing;

9 a bulk solid material supply chute that is adapted to
10 feed the particulate bulk solid material and that

communicates into said cylindrical space in said housing through a supply opening in said cylindrical wall;

a cellular wheel that comprises plural cellular wheel webs extending radially outwardly from a central wheel hub that is supported rotatably about said horizontal axis in said cylindrical space in said housing, and respective gap seals arranged respectively at radially outer edges of said cellular wheel webs, wherein respective dosing chambers are respectively formed and bounded radially between said central wheel hub and said cylindrical wall and circumferentially between respective successive neighboring pairs of said cellular wheel webs, wherein said gap seals are made of a hard material that has a hardness equal to that of a metal, wherein said gap seals are arranged to leave a radial spacing gap between each one of said gap seals and said cylindrical wall, and wherein respective radially outer edges of said gap seals are configured as respective acute shear-cutting edges that are oriented facing circumferentially forward in a rotation direction of said cellular wheel about said horizontal axis;

a counter-cutting member with a counter-cutting edge arranged in said supply chute adjacent to said supply opening at a chute-bounding side wall of said supply chute that is circumferentially downstream with respect to said rotation direction of said cellular wheel about said horizontal axis, wherein said counter-cutting edge is positioned relative to said shear-cutting edges and oriented circumferentially opposite said shear-cutting

edges so as to cooperate with said shear-cutting edges to shear-cut particles of the particulate bulk solid material between said counter-cutting edge and said shear-cutting edges;

a blow-in hole that is provided below said horizontal axis in a first one of said vertical side walls;

a blow-out hole that is provided below said horizontal axis and axially across from said blow-in hole in a second one of said vertical side walls; and

an injector nozzle that is mounted to said housing at said blow-in hole and that has an internal nozzle passage that converges to a throat and diverges from said throat to a nozzle outlet opening at an end of said injector nozzle arranged at said blow-in hole, wherein said injector nozzle ~~and that~~ is positioned and adapted to blow a stream of transport gas into and through said blow-in hole, a respective one of said dosing chambers in communication with said blow-in hole, and out through said blow-out hole in a blowing transport direction parallel to said horizontal axis so as to be adapted to cause a reduced pressure of the transport gas around said blow-in hole in said respective dosing chamber and thereby reduce an amount of leakage of said transport gas through said radial spacing gaps past said gap seals, and to transport the particulate bulk solid material with the transport gas out of said respective dosing chamber through said blow-out hole in said transport direction.

1 21. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 20, wherein said radial spacing
3 gap has a radial measure from 0.2 mm to 0.5 mm.

1 22. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 20, wherein each one of said
3 dosing chambers has a substantially trapezoidal, annular
4 sector cross-sectional shape, and said blow-out hole has a
5 substantially trapezoidal, annular sector opening shape.

1 23. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 22, wherein said opening shape of
3 said blow-out hole has an area that approximately
4 corresponds to an area of said cross-sectional shape of a
5 respective one of said dosing chambers.

Claim 24 (Canceled).

1 25. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 20, further comprising a
3 deflector scraper protruding from said chute-bounding side
4 wall into said supply chute above said counter-cutting
5 member so as to be adapted to deflect away from said
6 counter-cutting member the particulate bulk solid material
7 fed through said supply chute.

1 26. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 20, further comprising a
3 cylindrical wear layer on an inner surface of said
4 cylindrical wall and a respective planar wear layer on
5 respective inner surfaces of said vertical side walls of
6 said housing, wherein said wear layers are composed of a
7 wear resistant steel alloy or a spring steel.

1 27. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 20, wherein said cellular wheel
3 webs and said gap seals have a helical shape about said
4 horizontal axis.

1 28. (Previously presented) The blow-through cellular wheel
2 feeder according to claim 20, wherein said cellular wheel
3 webs and said gap seals each respectively extend at a
4 circumferentially skewed slant relative to said horizontal
5 axis.